

scanning speed of the electron beam by the time during which the current is at a changed level.

--19. A position detecting system claimed in Claim 15, wherein the voltage applying means periodically changes the voltage applied to the sample.

a3 --20. A position detecting system claimed in Claim 15, configured to further detect the position of a gate electrode on a gate oxide film covering a device region confined in said surface of said silicon substrate, wherein when said electron beam is bombarded onto said gate electrode, said electric current does not flow in said silicon substrate, but when said electron beam is bombarded onto said gate oxide film, since said gate oxide film is very thin, said electric current flows in said circuit component as the result of said electron beam that flows as said electric current through said gate oxide film, said device region and said silicon substrate to said voltage applying means because of the voltage applied to said rear surface of said silicon substrate, so that said position detecting means can determine said the position of said gate electrode and said device region.--

R E M A R K S

The specification has been amended to make editorial changes therein to place the application in condition for allowance at the time of the next Official Action.

Claims 1-4 and 7-10 were rejected as unpatentable over MUNAKATA 3,535,516 in view of KATO et al. 4,039,829 and

ICHIHASHI et al. 4,600,839. Claims 5 and 11 were rejected as unpatentable further in view of TODOKORO et al. 4,581,534 and claims 6 and 12 were rejected as unpatentable further in view of MIGITAKA et al. 4,219,731. The claims have been amended and are believed to avoid these rejections.

One of the objects of the present invention is to detect a position and diameter of a bottom of a via hole (page 3, lines 14-19). In the prior art, the position of the bottom of the hole is difficult to detect because the secondary (reflected) electrons do not emerge from the bottom of the hole in a manner that enables the position and diameter of the bottom of the via hole to be determined. To avoid this problem, the present invention detects a current change in the specimen without using the secondary (reflected) electrons (page 15, lines 11-14).

As explained at page 15, lines 15-24, a voltage is applied to the sample and the current flowing in the sample is detected. A current does not flow through the substrate 30 when the electron beam irradiates the insulating film 31, but a current does flow through the substrate when the beam irradiates the bottom of the contact hole 32 (the surface of the substrate). The position and diameter of the bottom of the hole are determined from the current output signal, such as shown in Figure 3.

In contrast, the references cited in the Official Action disclose conventional detection techniques using the secondary electrons. For example, note that MUNAKATA disclos-

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es means for detecting reflected electrons (column 3, lines 41-43, and column 4, lines 23-25), that KATO et al. disclose that secondary radiation is detected (column 1, lines 18-20), and that ICHIHASHI et al. disclose that secondary electrons are detected by the detectors (column 3, lines 5-9).

The claims specifically provide that the current flowing in the sample is the result of the electron beam that flows as an electric current through the sample to the voltage applying means because of the applied voltage, and that the position is detected without detecting the secondary or reflected electrons. Accordingly, the claims are believed to avoid the rejections.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

Respectfully submitted,

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